REMARKS/ARGUMENTS

Thorough examination and careful review of the application by the Examiner is noted and appreciated.

The Examiner has finalized the election of Claims 1-6 and rejected claims 1-6.

By way of the foregoing amendments, Claims 1 and 4-6 been amended. Claims 7-19 have been withdrawn. Accordingly, upon entry of this Response, Claims 1-6 are pending.

The changes in the claims do not introduce new matter but clarify matters shown and described in the application as filed. The foregoing amendments and following remarks are believed to be fully responsive to the Office Action mailed January 9, 2007 and render all currently pending claims at issue patentably distinct over the references cited by the Examiner. The foregoing amendments are taken in the interest of expediting prosecution and there is no intention of surrendering any range of equivalents to which Applicant would otherwise be entitled in view of the prior art. Reconsideration and examination of this application is respectfully requested in light of the foregoing amendments and the following remarks.

EXAMINER'S OFFICE ACTION

In the January 9, 2007 Office Action referenced above, (hereinafter, "1-9-07 OA") the Examiner:

Finalized the election of Claims 1-6;

rejected Claims 1-6 under 35 USC § 112, second paragraph, as being indefinite;

rejected Claims 1-6 under 35 USC § 102(e) as being anticipated by Kopf et al. U.S. Patent No. 6,744,237 (hereinafter "KOPF"); and

rejected Claims 1-6 under 35 USC § 102(e) as being anticipated by Iwasaki U.S. Publication No. 2002/0162694 (hereinafter "IWASAKI").

Election / Restrictions

The restriction of 7-19 by the Examiner is acknowledged. Accordingly, Claims 7-19 have been withdrawn.

Claim Rejections Under 35 USC § 112

The rejection of claims 1-6 under 35 USC § 112, second paragraph is respectfully traversed.

In rejecting Claims 1-6 under 35 USC § 112 the Examiner stated,

> **The recitations "determining the state of charge" and "setting the power output in claim 1, "the maximum voltage" and "the nominal state-of-charge" in claim 4, "the lumped system load power", "the maximum power" in claims 5 and 6 lack antecedent basis in those claims.**

1-9-07 OA, Pg. 2 § 3. Accordingly, Claims 1 and 4-6 were amended to correct the lack of antecedent basis noted by the Examiner.

In rejecting Claims 1-6 under 35 USC § 112 the Examiner stated, "The term 'nominal' in claims 4 and 6 is a relative term which renders the claim indefinite." *1-9-07 OA,* Pg. 2, § 4.

Claim 4 was amended to more clearly define the present invention. The word "nominal" was removed from Claim 4. Additionally, the second occurrence of "fuel cell" was replaced with "charge carrier".

Support for amending Claim 4 is disclosed in Applicant's Application, Page 6, Lines 16-18, "**The relative amount of power stored in the battery pack (charge carrier 16) is often referred to as its 'state-of-charge'.**" Further support for the amendment to Claim 4 is disclosed in Applicant's Application, Page 7, Lines 5-9, "**The control strategy by the inventive method... monitors the SOC of the charge carrier 16...**"

The Applicant respectfully submits that the amendments to Claims 1 and 4-6 place those Claims in condition for allowance, which allowance is earnestly solicited.

Claim Rejections Under 35 USC § 102(e)

Claims 1-6 are rejected under 35 USC § 102(e) as being anticipated by KOPF; and

Claims 1-6 are rejected under 35 USC § 102(e) as being anticipated by IWASAKI.

The rejection of claims 1-6 under 35 USC § 102(e) based on KOPF and IWASAKI are respectfully traversed.

Claims 1-6 were rejected under 35 USC § 102(e) as being anticipated by KOPF.

Applicant respectfully traverses the Examiner's rejection.

KOPF is directed to a hybrid power system for a vehicle that includes a fuel cell and a battery. KOPF discloses a power control system that uses an energy storage device (battery) to augment the power produced by a fuel cell in the event that a load occurs that exceeds the power that the fuel cell is capable of producing.

KOPF discloses a system wherein, "**The energy storage device provides all of the power to the load as long as the state of charge of the energy storage device is greater than a first predetermined state of charge.**" *KOPF*, Col. 1, Lines 35-38.

KOPF also states, "**The fuel cell provides power to the load only when the state of charge of the storage device falls below the predetermined level.**" *KOPF*, Col. 6, Lines 49-52.

In sharp distinction to KOPF, the present invention is directed to a control strategy that, "...**shares the power sourced from the fuel cell and the battery pack to the load in a manner that optimizes the use of the fuel cell, thereby conserving fuel and lengthening the service life of the battery.**" *Applicant's Application*, Page 3, Lines 10-13.

Thus, the present invention does not require that the SOC of the battery pack fall below a predetermined level before

power is supplied from the fuel cell to a load, as does KOPF. The present invention instead provides power to a load from either the fuel cell, battery pack, or both the fuel cell and the battery pack, depending on which source would provide the greatest system efficiency in terms of fuel efficiency and battery service life.

In regards to Claim 1 of Applicant's Application, the Examiner contends that:

> **Kopf et al. teach a method of controlling the operation of a hybrid power system comprising... (B) when the fuel cell supplies all of the power to the load as the state of charge of the energy storage device falls below a second predetermined value...**

1-9-07 OA, Pgs. 2,3, §6. The Applicant respectfully directs the Examiner's attention to Claim 1 of Applicant's Application. Claim 1 of Applicant's Application does not recite any limitation as to an SOC of the charge carrier that would trigger the operation of the fuel cell in the present invention.

The present invention does not restrict the operation of the fuel cell to those periods when the SOC of the battery has dropped below a predetermined threshold. Claim 1 of Applicant's Application discloses, "... **setting a power output of the charge carrier to a first value if the power required by the load is less than the maximum power available to be supplied from the fuel cell...**" *Applicant's Application,* Claim 1.

Therefore, in the present invention, the power output of the fuel cell is not conditioned upon the charge carrier reaching a minimum SOC, but rather, the power output of the charge carrier is conditioned upon the potential power output of the fuel cell with regard to the actual requirement of the load.

Thus, KOPF fails to anticipate independent Claim 1. As Claims 2-6 depend from Claim 1, KOPF also fails to anticipate Claims 2-6.

Claims 1-6 were rejected under 35 USC § 102(e) as being anticipated by IWASAKI.

Examiner equates the method of controlling the operation of a hybrid vehicle system in IWASAKI with the same method as the present invention.

Applicant respectfully traverses Examiner's rejection.

IWASAKI, like KOPF, discloses a system of controlling a hybrid power system in a vehicle. Additionally, IWASAKI discloses a method of operating a fuel cell system that reduces the demand for high-resolution sensors.

Independent claims 1, 16, and 17 of IWASAKI each are directed to a "fuel cell vehicle". *IWASAKI, Claims 1, 16, 17.* The present invention, as claimed in Applicant's Application, does not contain the limitation of employing the control system in a vehicle, rather the present invention is directed simply to a "a method of controlling the operation of hybrid power system.." *Applicant's Application, Claim 1.* Therefore,

the present invention may advantageously be used in other applications where a demand for electrical power may exist.

In rejecting Claim 1, the Examiner states, "...**(B) when the time average of the electrical load demand is less than the load corresponding to the maximum efficiency operating point of the fuel cell power system as the SOC of the battery is set to a first value...**" 1-9-07 OA, Pg. 3, §7.

The Applicant respectfully directs the Examiner's attention to Claim 1 of Applicant's Application, which states in relevant part, "... **setting a power output of the charge carrier to a first value if the power required by the load is less than the maximum power available to be supplied from the fuel cell...**" *Applicant's Application,* Claim 1.

Clearly, the invention claimed in Applicant's Application does not require that the actual load be compared with a "...load corresponding to the **maximum efficiency operating point** of the fuel system." *IWASAKI,* ¶[0042], prior to setting a power output of the charge carrier. Instead, the present invention looks to the actual load in relation to the "...**maximum power available to be supplied from the fuel cell...**" *Applicant's Application, supra.*

The Applicant therefore respectfully submits that neither KOPF nor IWASAKI disclose, teach, or suggest the method of the present invention.

The Applicant has clearly shown that the basic steps, as recited in independent Claim 1 of the present invention, are patentably distinct from the KOPF and IWASAKI references.

Based on the above, it is respectfully submitted that the amended Claim 1 is in condition for allowance, which allowance is earnestly solicited. With respect to the remaining claims, all of which depend from Claim 1, the fact that they claim additional elements or limitations also renders them allowable over KOPF and IWASAKI, which allowance is earnestly solicited.

It is believed that the present invention as amended is novel over the reference relied upon by the Examiner.

The rejection of Claims 1-6 under 35 USC § 102(e) based on anticipation is respectfully traversed. A reconsideration for allowance of these claims is respectfully requested of the Examiner.

Based on the foregoing, the Applicant respectfully submits that all of the pending claims, i.e. claims 1-6 are now in condition for allowance. Such favorable action by the Examiner at an early date is respectfully solicited.

In the event that the present invention is not in a condition for allowance for any other reasons, the Examiner is respectfully invited to call the Applicants' representative at his Bloomfield Hills, Michigan office at (248) 540-4040 such that necessary action may be taken to place the application in a condition for allowance.

Respectfully submitted,
Tung & Associates

Randy W. Tung
Reg. No. 31,311
Telephone: (248) 540-4040